

NOTES ON *SICYOS* (CUCURBITACEAE) IN THE HAWAIIAN ISLANDS

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ABSTRACT

Nomenclature and taxonomy of *Sicyos* L. in Hawai'i are clarified as a precursor to the *Manual of Flowering Plants of Hawai'i*. *Sarz* H. St. John is reduced to synonymy under *Sicyos*. New combinations *Sicyos herbstii* (H. St. John) Telford and *Sicyos alba* (H. St. John) Telford are made and *Sicyos hillebrandii* var. *anunu* H. St. John given new status as *S. anunu* (H. St. John) Telford. *Sicyos pachycarpus* Hook. & Arn. is lectotypified and shown to be the correct name for the species known as *S. microcarpus* H. Mann.

KEY WORDS: Hawai'i, *Sicyos herbstii*, *Sicyos alba*, *Sicyos anunu*, *Sicyos pachycarpus*, lectotypification.

INTRODUCTION

In Hillebrand's *Flora of the Hawaiian Islands* (1888, p 134), *Sicyos* L. was treated as the only indigenous genus of Cucurbitaceae with 8 endemic species. Since then, 5 genera have been segregated from *Sicyos* in Hawai'i and an additional 48 taxa described in *Sicyos* or its segregate genera.

The delimitation of the segregate genera on fruit ornamentation was questioned by Jeffrey (1978, p 361). His conclusion that they are congeneric is followed and developed in this paper.

As a precursor to the *Manual of the Flowering Plants of Hawai'i* (Wagner *et al.*, in press), this paper attempts to resolve some problems of taxonomy and nomenclature in Hawaiian Cucurbitaceae.

Status of the segregate genera.

As discussed by Jeffrey (1978, p 361), four of the genera segregated from *Sicyos*, namely *Cladocarpa* (H. St. John) H. St. John (1978b, p 491), *Sicyocarya* (A. Gray) H. St. John (1978a, p 407) and *Skottsbergiliana* H. St. John (1974, p 457), are better treated at sectional rank at most. All are consistent with the vegetative and floral syndromes of *Sicyos*, differing only in the fruit morphology which characterizes the sections.

The following new combination transfers a recently described species from *Cladocarpa* into *Sicyos*.

Sicyos herbstii (H. St. John) Telford, *comb. nov.* BASIONYM: *Cladocarpa herbstii* H. St. John, *Phytologia* 63:185. 1987. TYPE: Hawaiian Is., Kaua'i, Barking Sands, *D. Herbst* 5691 (HOLOTYPE: BISH).

Cladocarpa julesii H. St. John, *Phytologia* 63:185. 1987. TYPE: Kaua'i, *J. Remy* 542 (HOLOTYPE: P).

Cladocarpa pauciramosa H. St. John, *Phytologia* 63:186. 1987. TYPE: Kaua'i, Polihale, *C. Christensen* 326 (HOLOTYPE: BISH).

The single species of the fifth segregate genus, *Sarz alba* H. St. John (1978b, p 491) was segregated from *Sicyos cucumerinus* A. Gray because of its white fleshy fruit, despite mature fruit of *S. cucumerinus* being "still unknown." St. John relegated Gray's *S. cucumerinus* var. *B* to synonymy under *Sarz*. Recently collected fruit specimens of *S. cucumerinus* have been examined at BISH by the present author and the texture of the pericarp proved to be subfleshy. Certainly the character of fleshy fruit alone is untenable for generic segregation. This taxonomic view of *Sarz* in relation to *Sicyos* conforms with the treatment of *Sechium* P. Br. by Jeffrey (1978, p 360). In *Sechium* also, the pericarp may be fleshy, fibrous or woody.

A new combination is provided below for *Sarz alba* in *Sicyos*.

Sicyos alba (H. St. John) Telford, *comb. nov.* BASIONYM: *Sarz alba* H. St. John, *Bot. Jahrb. Syst.* 99:493. 1978. TYPE: Hawai'i, Kulani, *W. Gagne* 698 (BISH).

Vegetatively and in floral morphology, *Sicyos cucumerinus* and *Sarz alba* are so similar that not only generic but also specific separation must be questioned. Field studies and additional collections of the two species are required before resolution of the species delimitation problem is attempted.

The identity of *Sicyos pachycarpus*.

The first species of *Sicyos* collected and named from the Hawaiian Islands was *S. pachycarpus* Hooker & Arn. (1832, p 83), collected by Collie on Diamond Head, O'ahu in 1826-27. A. Gray (1854, p 650, t. 80), in his study of the U.S. Exploring Expedition's collections of 1840, misapplied the name *S. pachycarpus* to an as yet undescribed species from the Wai'anae Mountains, O'ahu. The specimen of *S. pachycarpus sensu* Gray lies far outside the circumscription of Hooker & Arnott's protologue. Gray must not have seen Collie's type collection housed at Kew.

Cogniaux (1881, p 896) followed Gray's misapplication and compounded it by citing more specimens. Hillebrand (1888, p 137) recognized a problem existed: "It is somewhat doubtful, however, if Gray's *S. pachycarpus* is the

same as that of Hooker & Arnott, for the latter authors assign a height of only 1 1/2-2" to their fruit, which points to *S. microcarpa*." Unfortunately, Hillebrand did not resolve the problem but instead also followed Gray's misapplication.

Collie's type gathering of *S. pachycarpus* raises another problem. The herbarium sheet at Kew originally consisted of two elements - one of these has been annotated by St. John as *S. microcarpus* H. Mann, the other as the lectotype (unpublished) of *S. pachycarpus* Hook. & Arn. The '*S. microcarpus*' element has been remounted on a separate sheet.

Hooker & Arnott's protologue agrees better with St. John's '*S. microcarpus*' element than with that proposed by him for lectotypification - 'female flowers are numerous in each capitulum...the capitulum itself is on a peduncle, about three-fourths of an inch long...fruit is ovate, about a line and a half long, suddenly attenuated into a beak which is almost half the length of the broad portion'.

The other element, i.e. St. John's '*S. pachycarpus*' element, differs in fewer female flowers per head, the peduncles longer and more slender, the fruit not so abruptly contracted before the attenuation. This element belongs in *S. waimanaloensis* H. St. John (1987, p 192) and is readily distinguished from *S. pachycarpus* by the slower expansion of the leaf laminae as well as the characters above. The two species are sympatric in eastern O'ahu.

The '*S. microcarpus*' element is here proposed as lectotype of *S. pachycarpus*.

Sicyos pachycarpus Hook. & Arn., Bot. Beechey Voy. 3, Sandwich Is.: 83. 1832. LECTOTYPE (here designated): Diamond Hill, O'ahu, Collie (K).

S. microcarpus H. Mann, Proc. Amer. Acad. Arts 7:167. 1867.

The identity of *Sicyos hillebrandii*.

The name *S. hillebrandii* H. St. John (1934, p 7), based on *S. laciniatus* Hillebr. (1888, p 138) non L. (1753, p 1013), with the type from Kula, Maui, has been applied to few collections from Maui and to those from several populations on Hawai'i. The Hawaiian material differs from the type in several character states - staminate flowers 5-8 mm diameter; staminate inflorescences on peduncles 12-30 cm long; pistillate flower heads on peduncles 4-12 cm long; fruit 15-20 mm long, as well as geographic separation, but has hitherto been recognized only at varietal rank. It is here raised to the status of species.

Sicyos anunu (H. St. John) Telford, *stat. nov.* BASIONYM: *S. hillebrandii* H. St. John var. *anunu* H. St. John, Phytologia 63:187. 1987. TYPE: Hawai'i Is., Kapapala, *C.N. Forbes 400.H* (HOLOTYPE: BISH).

- S. hillebrandii* H. St. John var. *douglasii* H. St. John, *Phytologia* 63:187. 1987. TYPE: Hawai'i Is., N, slope Mauna Kea, *O. Degener & Greenwall 21,364* (HOLOTYPE: BISH).

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BIBLIOGRAPHY

- Cogniaux, A. 1881. Cucurbitaces, in A. DC., *Monogr. Phan.* 3:325-951, 953-951.
- Gray, A. 1854. *U.S. Exploring Exped.*, Botany, Phanerogamia 1.
- Hillebrand, W.F. 1888. *Flora of the Hawaiian Islands*. Hafner Publishing Co., New York & London.
- Hooker, W.J. & G.A.W. Arnott. 1832. *The Botany of Captain Beechey's Voyage*, 3 Sandwich Islands.
- Jeffrey, C. 1978. Further Notes on Cucurbitaceae:IV, Some New-World taxa. *Kew Bull.* 33(2):347-380.
- Linnaeus, C. 1753. *Species Plantarum*, Facsimile ed. 1957. Ray Society, London.
- Mann, H. 1867. Enumeration of American Plants. *Proc. Amer. Acad. Arts* 7:143-235.
- St. John, H. 1934. *Panicum, Psychotria, and Sicyos*, Hawaiian plant studies 2. Bernice P. Bishop Mus. Occ. Pap. 10(12):7.
- . 1974. *Skottsbergiliana* new genus (Cucurbitaceae) of Hawaii Island, Hawaiian plant studies 41. *Pacific Sci.* 28(4):457-462.

- _____. 1978a. New combinations in Hawaiian Cucurbitaceae, Hawaiian plant studies 66. *Phytologia* 38(5):407-408.
- _____. 1978b. The Cucurbitaceae of Hawaii 1. generic revision. *Bot. Jahrb. Syst.* 99(4):490-497.
- _____. 1987a. Diagnosis of new species of *Cladocarpa* (Cucurbitaceae), Hawaiian plant studies 142. *Phytologia* 63(3):185-186.
- _____. 1987b. Diagnosis of new species of *Sicyos* (Cucurbitaceae), Hawaiian plant studies 143. *Phytologia* 63(3):187-192.
- Wagner, W.L., D.R. Herbst & S.H. Sohmer. (in press). *Manual of the Flowering Plants of Hawai'i*. University of Hawai'i Press & Bishop Museum Press, Honolulu.